

THE CLAIMS

What is claimed is:

- Sub 5 A-47
1. A golf ball comprising a core and a cover disposed about the core, wherein the core comprises a center and an outer core layer, and the cover comprises an inner cover layer and an outer cover layer; and
wherein the center has an outer diameter from about 0.375 inches to about 1.4 inches and deflection of greater than about 4.5 mm under a load of 100 Kg;
the outer core layer has an outer diameter of from about 1.4 in to about 1.62 in;
the inner cover layer has an outer diameter of greater than about 1.58 in and a material hardness of less than about 72 Shore D; and
the outer cover layer has a hardness of greater than about 50 Shore D and a material hardness of less than about 50 Shore D.
 2. The golf ball of claim 1, wherein the inner cover layer material hardness is between about 60 and about 70 Shore D.
 3. The golf ball of claim 1, wherein the inner cover layer outer diameter is from about 1.59 in to about 1.66 inches.
 4. The golf ball of claim 1, wherein the center has an outer diameter between about 0.5 inches and about 1.25 inches.
 5. The golf ball of claim 4, wherein the center has an outer diameter no greater than about 1.0 inches.
 6. The golf ball of claim 1, wherein the outer core layer outer diameter is from about 1.52 inches to about 1.58 inches.

7. The golf ball of claim 1, wherein the outer core layer has an outer diameter of at least about 1.55 inches.

8. The golf ball of claim 1, wherein the center has a first hardness, the outer core layer has a second hardness greater than the first, and the inner cover layer has a third hardness greater than the second.

9. The golf ball of claim 8, wherein the outer cover layer has a fourth hardness less than the third hardness.

10. The golf ball of claim 1, wherein the center is solid, liquid, hollow, or air-filled.

11. The golf ball of claim 1, wherein at least one of the inner or outer cover layers have a thickness of less than about 0.05 inches.

12. The golf ball of claim 1, wherein the inner cover layer comprises an ionomeric material, vinyl resins, polyolefins, polyurethanes, polyureas, polyamides, acrylic resins, thermoplastics, polyphenylene oxide resins, thermoplastic polyesters, thermoplastic rubbers, fully-neutralized polymers, partially-neutralized polymers, and mixtures thereof.

13. The golf ball of claim 1, wherein at least one of the center, core layer, or inner and outer cover layers comprises polybutadiene rubber composition comprising between about 2.2 parts and about 5 parts of a halogenated organosulfur compound.

14. The golf ball of claim 13, wherein the halogenated organosulfur compound is selected from the group consisting of pentafluorothiophenol; 2-fluorothiophenol; 3-fluorothiophenol; 4-fluorothiophenol; 2,3-fluorothiophenol; 2,4-fluorothiophenol; 3,4-fluorothiophenol; 3,5-fluorothiophenol; 2,3,4-fluorothiophenol; 3,4,5-fluorothiophenol; 2,3,4,5-tetrafluorothiophenol; 2,3,5,6-tetrafluorothiophenol; 4-chlorotetrafluorothiophenol; pentachlorothiophenol; 2-chlorothiophenol; 3-chlorothiophenol; 4-chlorothiophenol; 2,3-chlorothiophenol; 2,4-chlorothiophenol; 3,4-chlorothiophenol; 3,5-chlorothiophenol; 2,3,4-chlorothiophenol; 3,4,5-

chlorothiophenol; 2,3,4,5-tetrachlorothiophenol; 2,3,5,6-tetrachlorothiophenol;
pentabromothiophenol; 2-bromothiophenol; 3-bromothiophenol; 4-bromothiophenol; 2,3-
bromothiophenol; 2,4-bromothiophenol; 3,4-bromothiophenol; 3,5-bromothiophenol; 2,3,4-
bromothiophenol; 3,4,5-bromothiophenol; 2,3,4,5-tetrabromothiophenol; 2,3,5,6-
5 tetrabromothiophenol; pentaiodothiophenol; 2-iodothiophenol; 3-iodothiophenol; 4-
iodothiophenol; 2,3-iodothiophenol; 2,4-iodothiophenol; 3,4-iodothiophenol; 3,5-iodothiophenol;
2,3,4-iodothiophenol; 3,4,5-iodothiophenol; 2,3,4,5-tetraiodothiophenol; 2,3,5,6-
tetraiodothiophenol; and their zinc salts, the metal salts thereof, and mixtures thereof.

10 15. The golf ball of claim 14, wherein the halogenated organosulfur compound is
pentachlorothiophenol or the metal salt thereof.

16. The golf ball of claim 15, wherein the metal salt is selected from the group consisting of
zinc, calcium, magnesium, sodium, and lithium.

17. The golf ball of claim 16, wherein the metal salt is zinc.

18. The golf ball of claim 13, wherein the center and the outer core layer are solid and
comprise polybutadiene rubber composition comprising between about 2.2 parts and about 5
20 parts of a halogenated organosulfur compound or the zinc salt thereof.

19. The golf ball of claim 13, wherein the center and the outer core layer are solid and the
center comprises polybutadiene rubber composition comprising between about 2.2 parts and
about 5 parts of a halogenated organosulfur compound or the zinc salt thereof.

25 20. The golf ball of claim 13, wherein the center and the outer core layer are solid and the
outer core layer comprises polybutadiene rubber composition comprising between about 2.2
parts and about 5 parts of a halogenated organosulfur compound or the zinc salt thereof.

30 21. The golf ball of claim 1, wherein the core has an SCDI compression less than about 160.

22. The golf ball of claim 21, wherein the core has an SCDI compression between about 40 and about 160.

23. The golf ball of claim 22, wherein the core has an SCDI compression between about 60 and about 120.

24. The golf ball of claim 13, wherein the polybutadiene composition further comprises an α,β -unsaturated carboxylic acid or a metal salt thereof, an organic peroxide, and a filler.

25. The golf ball of claim 1, wherein the outer cover layer comprises a polyurethane composition comprising a prepolymer formed of a polyisocyanate and a polyol, and a curing agent.

26. The golf ball of claim 25, wherein at least one of the prepolymer and curing agent are saturated.

27. The golf ball of claim 25, wherein the polyurethane composition comprises at least one of a UV absorber, a hindered amine light stabilizer, or an optical brightener.